

### **REMARKS**

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Official Action dated October 18, 2004. In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

#### **Status of the Claims**

Claims 1-10 are under consideration in this application. Claims 1-4 are being amended, as set forth above, in order to more particularly define and distinctly claim Applicants' invention. New claims 5-10 are being added to recite other embodiments described in the specification.

#### **Additional Amendments**

The claims and the drawings are being amended to correct formal errors and/or to better disclose or describe the features of the present invention as claimed. Applicants hereby submit that no new matter is being introduced into the application through the submission of this response.

#### **Formality Rejection**

The drawings filed on August 8, 2001 were objected to for various informalities, and the Examiner has requested correction thereof. Text is being added into the respective blocks in Figs. 3-4 and 6-13 as requested by the Examiner. However, Applicants contend that Figs. 14-15 should not be labeled as "Prior Art" since they depict background technology incorporated into the invention. Please refer to the description on page 2, lines 3-6 "FIG. 15 is a conceptual diagram for explaining the relation between the users and a data center for collecting data of trace of user's mouse clicks to conduct CRM analysis" and the description on page 3, lines 10-11. "FIG. 14, an example of the form of business done via a Web page will be described."

As indicated, the drawings have been substantially amended as required by the Examiner except as noted above. Accordingly, the withdrawal of the outstanding informality rejection is in order, and is therefore respectfully solicited. The Examiner is further requested to acknowledge receipt of the priority document filed August 8, 2001.

#### Prior Art Rejections

Claims 1-4 were rejected under 35 U.S.C. § 102(e) on the grounds of being anticipated by US Patent App. Pub. No. 2002/0034379 of Tanaka (hereinafter "Tanaka"). The prior art reference of Japanese Laid-open (2000-242757) was cited as being pertinent to the present application. This rejection has been carefully considered, but is most respectfully traversed.

The logical volume administration method of the invention, comprises: designating (*"at the time of designation"* p. 7, line 25) a plurality of logical volumes 140 in a disk apparatus 120 (Fig. 1; pp. 10-11) serving as a storage each of which is constructed by a steady area D0, D1 corresponding to a disk area 150A, 150B in the disk apparatus 120 steadily allocated to a task (*"disk areas D0 and D1 are allocated to steady areas of logical volumes LV0 and LV1, respectively"* p. 12, lines 15-17; *"Data of one logical volume is steadily stored in each of the disk areas (150A and 150B) which do not belong to the disk pool 180."* P. 10, lines 6-9) and a temporary area D2, D3 not corresponding to a task or a disk area (e.g., 150A, 150B) in the disk apparatus 120 until allocation of a disk area is requested (*"a disk area D2 is registered in the temporary area of the logical volume LV0"* p. 12, lines 2-4); allocating first disk areas 150A, 150B in said disk apparatus 120 as said plurality of steady areas D0, D1 of said plurality of logical volumes 140; and allocating second disk areas 150C, 150D in said disk apparatus 120, which are different from said first disk areas 150A, 150B, as a disk pool 180 to be said plurality of temporary areas D2, D3 of said plurality of logical volumes 140 in a time sharing manner (*"Data of a plurality of logical volumes is stored into the disk areas (150C and 150D) belonging to the disk pool 180 in a time sharing manner."* P. 10, lines 9-11).

The invention, as recited in claim 5, is directed to a computer system for implementing the method recited in claim 1, comprising: a disk apparatus; and a computer which designates one of first disk areas of said disk apparatus to each of a plurality of logical

volumes. Each of said logical volumes includes a steady area corresponding to one of the first disk areas in the disk apparatus steadily allocated to a task and a temporary area not corresponding to a task or a disk area in the disk apparatus until allocation of a disk area is requested. The computer allocates second disk areas in said disk apparatus, which is different from the first disk areas to be said temporary area of said logical volume in a time sharing manner, as a disk pool to be said plurality of temporary areas of said plurality of logical volumes in a time sharing manner.

The invention, as recited in claim 8, is also directed to a computer system comprising: a storage apparatus; and a computer which designates one of first storage areas of said storage apparatus to each one of a plurality of logical volumes, said logical volumes being accessed by requests of write in and read out. The storage apparatus includes said first storage areas and second storage areas. Each of said logical volumes includes a first area corresponding to said first storage area of said storage apparatus and a second area corresponding to said second storage area of said storage apparatus. The computer allocates said second areas of said storage apparatus to be said second areas of said logical volumes in a time sharing manner.

*“To the temporary area, a disk area is allocated as necessary in accordance with a task from disk areas (disk pool) which are not commanded by any tasks. For example, in the case of analyzing data of a company A providing a Web site described above, a disk pool is allocated to the temporary area in a logical volume A allocated to an analysis application executed for the company A, to store analysis data. In the case of analyzing data of a company B providing a Web site, a disk pool is allocated to the temporary area in a logical volume B allocated to an analysis application executed for the company B, to store analysis data. If the analysis execution time is adjusted between the companies A and B, the storage price which has to be conventionally paid by one user can be shared by the two companies, so that the cost of storing data in association with analysis is reduced. The order of analysis execution is determined according to the priorities determined on the companies A and B (logical volumes A and B). The storage service provider charges the company in accordance with the priority of the logical volume, maximum allocable size of the disk pool, and total use time  $\times$  use size. The steady area is used as a data area for smoothly performing the*

*operations of the system such as provision of a Web page and collection of access data (p. 7, 1<sup>st</sup> paragraph)."*

Each logical volume in a disk apparatus serving as a storage of the invention is constructed by (1) a steady area corresponding to a disk area in the disk apparatus steadily allocated to a task and (2) a temporary area not corresponding to a task or a disk area in the disk apparatus until allocation of a disk area is requested. Upon request, disk areas in the disk apparatus will be located as a disk pool to be a plurality of temporary areas of a plurality of logical volumes in a time sharing manner.

In contrast, the prior art hierarchy of structures has each individual fixed-disk drive as a physical volume (PV) with a name, such as /dev/hdisk0. Every physical volume in use belongs to a volume group (VG). All of the physical volumes in a volume group are divided into physical partitions (PPs) of the same size (by default 2MB in volume groups that include physical volumes smaller than 300MB, 4MB otherwise). Within each volume group, one or more logical volumes (LVs) are defined. Logical volumes are groups of information located on physical volumes. Data on logical volumes appears to be contiguous to the user but can be discontinuous on the physical volume. This allows file systems, paging space, and other logical volumes to be resized or relocated, span multiple physical volumes, and have their contents replicated for greater flexibility and availability in the storage of data. Each prior art logical volume consists of one or more logical partitions (LPs). Each logical partition corresponds to at least one physical partition. The traditional logical volumes are not configured as logical partitions (LPs), rather than a steady area and a temporary area to be pooled into a disk pool corresponding to the logical volumes in a time sharing manner.

Applicants respectfully contend that Tanaka fails to teach or suggest such a **unique logical volume scheme** of the invention.

Tanaka does not mention the phrase "logical volume" anywhere in the disclosure, nor does Tanaka refer "a logical volume" as defined in claims 1, 5, 8. Tanaka's information storage system only includes temporary storage areas 102 and ordinary recording areas 104, which are provided in a plurality recording device groups A-D in Fig. 2.

In particular, it is each of Tanaka's ***physical*** "data storage units" ([0033], line 3; A-D in Fig. 2), rather than a ***logical volume***, which includes one temporary storage area 102 and

the remaining area 104 as an ordinary recording area. Tanaka's information storage system allocates "*at least a part of the storage capacity of the data storage unit equipped in the device as a temporary storage area* ([0032], lines 7-9)" first, and then allocates "*a remaining area 104 (hereinafter referred to as 'ordinary recording area') ... of the total storage capacity of the data storage unit groups A through D* ([0033], lines 6-8).

As the temporary storage areas 102 and the ordinary storage areas 104 of a plurality recording device groups A-D are physical storage areas, each of them corresponds to a physical disk area. However, they are essentially different from the steady area and the temporary area of the logical volume of the invention.

Tanaka's temporary storage areas 102, the steady areas as alleged by the Examiner, are used "*virtually in a ring structure, and always overwriting and recording inputted information* (paragraph [0032]; Fig. 2)." Only one of the temporary storage areas 102 in a selected data storage unit is operating, and the rest of the temporary storage areas 102 in other data storage units, the temporary areas as alleged by the Examiner, are kept in a stopped state not to be read or record ([0036]; p. 4, 1<sup>st</sup> paragraph of the outstanding office action). However, each of the alleged temporary areas by the Examiner is merely allocated to ONE disk area in ONE respective physical data storage unit and kept in a stopped state, but not being allocated to A PLURALITY OF disk areaS in the disk apparatus as *a disk pool* corresponding to A PLURALITY OF logical volumeS in a time sharing manner as the invention. Arguendo, each of Tanaka's ordinary recording areas 104 shares the same deficiency as the alleged temporary areas by the Examiner.

As such, Tanaka falls far short of anticipating or even rendering obvious every feature of the present invention as now claimed in claims 1, 5 and 8. The present invention as now claimed is distinguishable and thereby allowable over the rejections raised in the Office Action. The withdrawal of the outstanding prior art rejections is in order, and is respectfully solicited.

### Conclusion

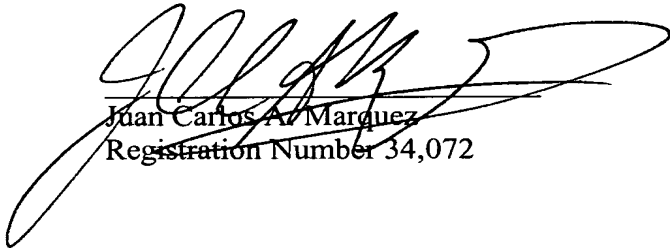
In view of all the above, clear and distinct differences as discussed exist between the present invention as now claimed and the prior art references upon which the rejections in the

Office Action rely, Applicants respectfully contend that the prior art references cannot anticipate the present invention or render the present invention obvious. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicants' undersigned representative at the address and phone number indicated below.

Respectfully submitted,

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SPF/JCM/JT

**IN THE DRAWINGS:**

Please enter the attached corrected drawings Figs. 3-4 and 6-13, in which text is being added into the respective blocks, to replace Figs. 3-4 and 6-13 as originally filed. A Letter to Draftsperson is also submitted herewith.